

In the Claims: (strikethrough parts deleted and underlined parts added)

Please delete Claims 1, 2, 3, 4, 5, 6, 7, 36, 40, 41, 42, 43, 44 without prejudice.

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)

8. (Currently Amended) A spray cooling system comprising:
a cooling surface with a hotspot zone producing a high heat flux;
a sprayer in a spaced apart relationship to said hotspot zone and capable of transforming a supply of liquid coolant into a continuous and non-incremental pattern of droplets that impinge and create a thin coolant film within said hotspot zone;
wherein said thin coolant film cools said hotspot zone primarily through evaporation; and
wherein non-evaporated amounts of said thin coolant film dispensed within said hotspot zone creates a thicker coolant film over the remaining areas of said cooling surface.

9. (Currently Amended) The spray cooling system of claim 8, further comprising at least one secondary orifice for adding said coolant in a continuous and non-incremental manner to said thicker coolant film.

10. (Previously Amended) The spray cooling system of claim 9, wherein said secondary orifice is an incremental drop ejector.

11. (Original) The spray cooling system of claim 8, further comprising a vapor management protrusion surrounding said sprayer.

12. (Original) The spray cooling system of claim 8, wherein at least a portion of said cooling surface includes a plurality of microchannels.

13. (Original) The spray cooling system of claim 8, wherein said sprayer is at a non-perpendicular angle with said component.

14. (Original) The spray cooling system of claim 8, wherein said sprayer is an atomizer.

15. (Currently Amended) A spray cooling system comprising:
an electronic component with a cooling surface having a hotspot zone producing a high heat flux;

a sprayer in a spaced apart relationship to said hotspot zone and capable of transforming a supply of liquid coolant into a continuous and non-incremental pattern of droplets that impinge and create a thin coolant film within said high hotspot zone;

wherein said thin coolant film cools said hotspot zone primarily through evaporation; and
wherein non-evaporated amounts of said thin coolant film dispensed within said hotspot zone creates a thicker coolant film over the remaining areas of said cooling surface.

16. (Currently Amended) The spray cooling system of claim 15, further comprising at least one secondary orifice for adding said liquid coolant in a continuous and non-incremental manner to said thicker coolant film.

17. (Original) The spray cooling system of claim 16, wherein said secondary orifice is an incremental drop ejector.

18. (Canceled)

19. (Original) The spray cooling system of claim 15, further comprising a vapor management protrusion surrounding said sprayer.

20. (Original) The spray cooling system of claim 15, wherein at least a portion of said cooling surface includes a plurality of microchannels.

21. (Original) The spray cooling system of claim 15, wherein said sprayer is at a non-perpendicular angle with said component.

22. (Original) The spray cooling system of claim 15, wherein said sprayer is an atomizer.

23. (Currently Amended) A thermal management system comprising:
a cooling surface with a hotspot having a first heat flux;
an at least one sprayer in a spaced apart relationship to said hotspot and capable of transforming a supply of liquid cooling into a continuous and non-incremental pattern of droplets that impinge and create a thin coolant film on said hotspot;
wherein said thin coolant film absorbs said first heat flux;
wherein a radial flow of said thin coolant film creates a thicker coolant film over a second zone of said electronic component, said second zone producing a second heat flux that is less than one-third the magnitude of said first heat flux; and
wherein said thicker coolant film absorbs said second heat flux.

24. (Currently Amended) The thermal management system of claim 23, further comprising at least one secondary orifice for adding said coolant in a continuous and non-incremental manner to said thicker coolant film.

25. (Original) The thermal management system of claim 24, wherein said at least one secondary orifice is an incremental drop ejector.

26. (Original) The thermal management system of claim 23, further comprising a vapor management protrusion surrounding said at least one sprayer.

27. (Original) The thermal management system of claim 24, wherein at least a portion of said cooling surface includes a plurality of etched microchannels.

28. (Original) The thermal management system of claim 24, wherein said sprayer is at a substantial angle with said component.

29. (Original) The thermal management system of claim 24, wherein said second heat flux is less than 100 watts per square centimeter.

30. (Original) The thermal management system of claim 24, wherein said sprayer is an atomizer.

31. (Original) The thermal management system of claim 24, wherein a hydraulic jump exists between said thin coolant film and said thicker coolant film.

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Currently Amended) A liquid cooling system comprising:
an electronic component to be cooled having a cooling surface with a hotspot producing a first heat flux, wherein the non-hotspot portion of said cooling surface produces a second heat flux;
wherein said first heat flux is at least three times greater in magnitude than said second heat flux; and

an at least one sprayer in a spaced apart relationship and at a non-perpendicular angle to said hotspot, wherein said at least one sprayer dispenses droplets onto said hotspot in a ~~fashion~~ continuous and non-incremental pattern that creates a thin coolant film on said hotspot and a thick film on said non-hotspot portion of said cooling surface, said thin coolant film capable of cooling said hotspot and said thick film capable of cooling said non-hotspot portion of said cooling surface.

36. (Canceled)

37. (Original) The liquid cooling system of claim 35, wherein said first heat flux is at least three times greater in magnitude than said second heat flux.

38. (Currently Amended) The liquid cooling system of claim 35, further including at least one secondary nozzle for adding a supply of liquid coolant in a continuous and non-incremental manner to said thick film.

39. (Canceled)

40. (Canceled)

41. (Canceled)

42. (Canceled)

43. (Canceled)

44. (Canceled)

Please add the following claim:

45. (New) A spray cooling system comprising:
an electronic device having a cooling surface with a hotspot zone producing a high heat flux;

a sprayer in a spaced apart relationship to said hotspot zone and capable of transforming a supply of liquid coolant into a continuous and non-incremental pattern of droplets that impinge and create a thin coolant film within said hotspot zone;

wherein said sprayer is comprised of an atomizer;

wherein said thin coolant film cools said hotspot zone primarily through evaporation; and

wherein non-evaporated amounts of said thin coolant film dispensed within said hotspot zone creates a thicker coolant film over the remaining areas of said cooling surface;

at least one secondary orifice for adding said coolant in a continuous and non-incremental manner to said thicker coolant film; and

at least one vapor management protrusion surrounding said sprayer.